

## REMARKS

Claims 1-20, 22-31, and 35-37 are pending in this application. Claim 21 has been canceled to expedite prosecution, and claims 32-34 have been canceled without prejudice as drawn to non-elected subject matter. Applicants expressly reserve the right to pursue non-elected subject matter in a timely filed divisional. Claims 1, 20 and 22 have been amended and claims 35-37 added to define applicant's invention with greater particularity. The amendments and new claims are fully supported by the specification and no new matter has been added. In view of the amendment and following remarks, Applicants respectfully request reconsideration of the claims and submit that the application is in condition for allowance.

### *I. Claim Rejections Under 35 U.S.C. § 102(b)*

The rejection of claims 20-31 under 35 U.S.C. § 102(b) as allegedly being anticipated by Chaloner-Gill (U.S. Patent No. 5,445,856) is respectfully traversed. Claim 20 has been amended to include certain elements of claim 21; the latter claim has been canceled. Claim 22 has been rewritten in independent form to include the elements of claim 20 as originally filed. As amended, claims 20 and 22 and their dependent claims distinguish over Chaloner-Gill by expressly reciting absorbent material completely lacking in the laminates of Chaloner-Gill. Thus, the cited reference does not teach or suggest the use of molecular sieves, magnesium phosphate, activated charcoal, and combinations thereof as a moisture absorbent (claim 20) nor does Chaloner-Gill teach or suggest a hydrofluoric acid absorbent selected from activated charcoal, molecular sieves, clays and combinations thereof. Accordingly, Chaloner-Gill fails to teach each and every element of claims 20 and 22-31. Applicants respectfully request that this ground of rejection be withdrawn.

In addition, new claim 35, depending from claim 20, has been added. Claim 35 further distinguishes over Chaloner-Gill by reciting molecular sieves as the absorbent material present in

the sealant layer. As disclosed in paragraph 35 and Table 1 in the application, molecular sieves provide the advantage of preferentially reacting with water vapor rather than electrolyte solvent. In addition, molecular sieves also readily react with HF acid, a byproduct of electrolyte decomposition. These dual properties make molecular sieves particularly well suited as the absorbent material on the sealant layer in a laminate for use as a battery housing. Because Chaloner-Gill neither teaches nor suggests such a laminate utilizing molecular sieves, it is respectfully submitted that claim 35 is patentable and should be allowed.

## ***II. Claim Rejections Under 35 U.S.C. § 103(a)***

The present Office Action maintains the obviousness rejections set forth in the prior Office Action, mailed 2/13/2003. Claims 1-5 and 7-17 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Chaloner-Gill (U.S. Patent No. 5,445,856) in view of Kurfman (U.S. Patent No. 4,612,216). Claim 6 was rejected under 35 U.S.C. § 103(a) over Chaloner-Gill in view of Kurfman and further in view of Sasaki (U.S. No. 6,277,516). Claims 18 and 19 were rejected as allegedly obvious over Chaloner-Gill in view of Kurfman and in view of Shores (U.S. No. 5,401,536). Applicants respectfully traverse these rejections.

Applicants' invention as defined by amended claim 1 distinguishes over the combination of Chaloner-Gill and Kurfman by reciting a laminate comprising:

(a) a sealant layer that is capable of acting as a barrier to an electrolyte, the sealant layer having an internal surface that is substantially inert to the electrolyte and an external surface;

(b) a barrier layer comprising a first layer of metal foil and a second layer of metal foil adjacent to the first layer, the first and second layers of metal foil being separate and distinct, and the barrier layer having a first surface disposed adjacent to the external surface of the sealant layer and an external surface.

The present amendment clarifies that the barrier layer of the claimed laminate is comprised of a first layer of metal foil and a second layer of metal foil adjacent to the first layer, the first and second layers of metal foil being separate and distinct. The amended claim language emphasizes the discrete nature of the first and second layers of metal foil. As one of ordinary skill in the art will understand, a foil is a “very thin sheet metal.” Merriam-Webster’s Collegiate Dictionary, Tenth Edition, page 451 (a copy of which is enclosed). Thus, the barrier layer comprises two very thin sheets of metal. The specification clearly supports the separate and distinct nature of the metal foils: paragraph 40 of the application discloses that in one embodiment “the layers of the flexible laminate may ‘float’ or slide over one another in a non-adhered fashion.” In another embodiment, shown as FIG. 1, “[t]he first foil layer 13 is in turn attached with adhesive 14 to a second metal foil layer 15.” Application, paragraph 36. New claims 36 and 37 are expressly directed to the latter embodiment. Thus, neither the amended claims nor the new claims encompass a single metal sheet having two layers.

Moreover, the claimed laminates provide superior leak protection over laminates having a barrier layer comprising a single metal sheet. As disclosed in paragraph 28 of the specification, metal foils have pinholes in them that allow solvent to leak from the packaging, thus causing battery failure due to corrosion-induced rupturing at this point. While thicker foil usually reduces the quantity of pinholes, the likelihood of foil cracking increases. Thicker foils are also more difficult to heat seal due to thermal conduction of heat by the thicker metal. As demonstrated by applicants’ comparative example, a laminate made from two thin foils with a combined metal thickness of 18 microns had a marked improvement in barrier capability compared to a laminate made from a single 25 micron thick foil. Application, paragraph 56. This example dramatically illustrates that the improvement in performance depends on the use of two separate and distinct foils in which pinholes do not align with one another.

In contrast to the claimed invention, the combination of Chaloner-Gill and Kurfman fail to disclose a laminate having a barrier layer with first and second layers of metal foil that are

separate and distinct. Although the Examiner asserts that Chaloner-Gill teaches a laminate for protecting components of an electrochemical cell, he admits that "Chaloner-Gill fails to teach that the laminate comprises first and second metal layers, where the metal layers are adjacent to each other." Office Action, mailed 2/13/2003, page 6 (relied upon in present Office Action, pages 3-4, items 5-7). Combining Kurfman with Chaloner-Gill cannot cure this deficiency. Kurfman, directed to a laminate designed to prevent formation of crack voids that mar the appearance of metallized plastic films, (col. 1, lines 30-53; col. 4, lines 56-59) discloses a metal/metal/polymer laminate having two metal layers intimately adhered to each other. Kurfman, col. 2, lines 25-28. The metal/metal segregated structure of the laminate is very different from the separate and distinct metal foils required by the claimed invention.

Because of the way it is constructed, the segregated alloy of Kurfman is in fact a single sheet. The metallized film of Kurfman is formed first by depositing a metal or metal alloy on a polymer sheet. Kurfman, col. 2, lines 15-25. A second metal or metal alloy with a melting point slightly lower than that of the first is then deposited on the first metal layer. *Id.*, lines 25-34. The deposition of the layers is performed using metallization techniques such as vacuum deposition, sputter coating, and ion plating. *Id.*, col. 10, lines 29-44. As is well known, each of these deposition techniques results in a single metal sheet regardless of whether the sheet comprises two compositionally different layers. Moreover, upon forming the laminate, heat and pressure cause the polymer to deform, i.e., soften and stretch, and the high melting metal stretches and begins to form micro cracks. The low melting metal, more mobile because it is closer to its melting point, diffuses into these micro crack regions and prevents the formation of a crack void. In fact "most if not all of the metal in the two metal layers is in the melted state." *Id.*, col. 4, line 68 – col. 5, line 2. The resulting layers cannot "'float' or slide over one another in a non-adhered fashion," and the use of adhesive between the deposition of the metal layers would defeat the very purpose of Kurfman's invention: preventing crack voids during laminate formation. Thus, the metallized film taught by Kurfman is a single metal sheet that cannot meet the requirement

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for a barrier layer comprising two separate and distinct layers of metal foil in the claimed laminates. Consequently, a *prima facie* case of obviousness has not been established for any claim wherein the rejection relies on Kurfman. Applicants respectfully request withdrawal of this ground of rejection.

### ***III. Conclusion***

In view of the above remarks and amendments, reconsideration and favorable action on all claims is respectfully requested. In the event that any issues remain to be resolved in view of this communication, the Examiner is invited to contact the undersigned by telephone so that a prompt disposition of this application can be achieved.

Respectfully submitted,

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